United States Government **Department of Energy**

memorandum

DATE: September 11, 1996

REPLY TO ATTN OF: EH-53 (R. Sastry, 301-903-4664)

SUBJECT: Chemical Safety Concerns / Search of Occurrence Reporting and Processing System (ORPS)

TO: Distribution

Significant Occurrences

August, 1996

Class 1:

None

Class 2:

Pantex - chlorine exposure, employee treated and released

Los Alamos - employees cut when waste chemical bottle ruptures

Los Alamos - unprotected employee enters room with visible fumes present

Additional:

At Los Alamos and at INEL, employees were potentially exposed to mercury vapor, results of medical evaluations are pending. At Rocky Flats, potentially shock- sensitive chemicals were discovered. At Livermore, an accidental halon release caused the evacuation of a building.

These occurrences are further described below with additional information, including Occurrence Report (OR) numbers, provided in the Attachment.

A search of ORPS for occurrences having chemical safety relevance conducted for the month of August 1996 produced 30 reports representing potential chemical safety concerns. These occurrences are listed in the Attachment. Eight occurrences were categorized as "Unusual" with the remainder identified as "Off-normal." The Office of Environmental Management (EM) was Cognizant Secretarial Office (CSO) for 14 occurrences; Defense Programs (DP) reported nine; Energy Research (ER), Nuclear Energy (NE), and Uranium Enrichment (UE) each had two; and Civilian Radioactive Waste Management (RW) one. This CSO designation may change after the distribution of this monthly memorandum, and this change will be reflected in Quarterly and Annual Reviews.

In order to determine which chemical safety occurrences represent more important (significant) Levels of Concern, a classification scheme has been developed. The definitions of these Classes are as follows:

Class 1	Occurrences characterized by an injury or exposure requiring hospital treatment, or confirmed, severe environmental effect; also occurrences that had the potential to cause these effects with all safety barriers down, except, for example, that no one was nearby to be injured or exposed, or escaped in time, or the climatic conditions were favorable;
Class 2	Occurrences characterized by minor injury (first aid) or exposure, or minor environmental damage; also occurrences that were near misses (where one additional safety barrier remained to prevent consequences) to those in Class 1;
Class 3	Potential precursors to the occurrences in Class 1 or 2;
Class 4	Minor occurrences such as leaks, spills, or releases, which may be significant in their frequency of occurrence though not in their consequences.

There were three Class 2 occurrences reported during August. There were 15 Class 3 occurrences. Among the Class 3 occurrences, in addition to those noted previously, was the discovery of mercury in a drain trap at Hanford. At Los Alamos, employees were working with an unpermitted open blast door during remote machining operations. At Rocky Flats, explosive devices were stored such that markings were not visible. At Livermore, a drum lid marked "Explosives" was found during a soil removal project.

Summaries of Class 2 Occurrences:

Exposure to Chlorine Gas (DP): (ALO-AO-MHSM-PANTEX-1996-0186) On August 23, 1996, it was determined that an employee had been exposed to approximately one part per million (ppm) of chlorine gas. The operator entered a building to perform shift checks. Upon entering, he noticed a stronger than usual chlorine odor and began to look for the cause. As he was checking for leaks in the hoses, a chlorine gas alarm activated and he evacuated the building. The chlorine gas monitor is designed to alarm at 1 ppm (the Occupational Safety and Health Administration limit). The employee was evaluated by Emergency Medical Technicians and found to have only a raspy throat. He was transported to a hospital for further evaluation. After an examination, he was released.

Injuries when Chemical Waste Bottle Ruptures (DP): (ALO-LA-LANL-RADIOCHEM-1996-0008) On August 26, at Los Alamos, a two-liter glass bottle of waste sulfuric acid solution ruptured, dispersing glass fragments and cutting the fingers of two nearby employees. Both employees required stitches. Both employees were treated and released back to work. The cause of the bottle rupture remains under investigation. The bottle contained legacy waste that had been shipped for a waste treatability study. The accompanying waste profile form did not indicate any constituents that would cause a buildup of pressure in the bottle over time. According to the waste profile, the bottles contained sulfuric acid with trace amounts of uranium-238, thorium, and technicium-99. Additionally, trace amounts of nickel and chromium were indicated. The liquid had been used as a cleaning bath for glassware.

Unprotected Employee Enters Room with Visible Chemical Haze (ER): (ALO-LA-LANL-HRL-1996-0003) On August 16, it was determined that an immediate response associated with a controlled partial evacuation of a Los Alamos facility was deemed worthy of reporting as a potential concern. A senior technician observed a haze in a biological laboratory and entered to terminate the source, which was visible from the window of the laboratory door. The actions of the senior technician have been deemed questionable because she entered a room with a visible haze. The personnel who discovered the fumes were directed to Occupational Medicine for evaluation. Personnel experienced only mild irritation from inhalation of fumes. All three were released the same day without any work restrictions. It was subsequently determined that the source of the haze was a beaker that had boiled dry on a hot plate; the

beaker contained only plastic material. Information from the manufacturer indicates that the plastic is polymethylpentene. The MSDS for this material is currently being evaluated for combustible products.

.

Additional information regarding these occurrences and others will be discussed in an upcoming Quarterly Review. As occurrence reports are finalized, lessons learned will be communicated.

[Signature of]

Rama Sastry
Office of Field Support

Attachment

Note to Distribution:

This document is being electronically distributed. If you want to receive the document electronically and/or to be removed from the hard copy distribution list, to add another person, or to change your address, please contact **John Usher** Voice: 516-344-2096, Fax: 516-344-3957, E-mail:usher@bnl.gov at Brookhaven National Laboratory. A DOE Chemical Safety Concerns homepage is under construction at this time. The Internet address for this site is http://www.dne.bnl.gov/etd/csc/. Archiving of the CSC reports is currently underway. Please feel free to visit the DOE CSC site during construction and to provide comments about the site to John Usher.

Web conversion by: John Usher
Web page design: Joseph Kahn